—研究ノート—
Scientific Note

Copepods Collected along 33.5°E Longitude of the Antarctic Ocean in the 1976 Summer

Satoshi YAMADA[1], Atsushi TANIMURA[2] and Takashi MINODA[3]

1976 年夏季，南極海インド洋区の東経 33.5° 線に沿って得られたカイアシ類資料

山田　智[1]・谷村　篤[2]・箕田　嵩[3]

要旨: 1976年2月25日から3月2日の間，南極海インド洋区の東経 33.5° 線に沿った南緯 50° 以南の6観測点において採集したカイアシ類の種組成を調査した．採集はノルパックネット（口径 45 cm，目合 0.33 mm）を用いて水深 200 m から表面までの鉛直曳によって行われた．各測点ともカイアシ類が最も卓越して出現し，動物プランクトン総個体数の 85% 以上を占めた．Oncaeidae を除く 14 属 18 種類のカイアシ類が同定された．*Calanus propinquus*, *Calanoides acutus*, *Rhincalanus gigas*, *Ctenocalanus vanus*, *Scolecithricella glacialis* および *Oithona similis* はほぼ全地点で出現した．*Miclocalanus pygmaeus*, *Lucicutia* sp., *Haloptilus ocellatus*, *Haloptilus oxycephalus* および *Metridia gerlachei* は南緯 60° 以南で，*Calanus simillimus*, *Clausocalanus laticeps*, *Metridia lucens* および *Oithona frigida* は南緯 60° 以北でのみ出現した．*Euchaeta antarctica*, *Racovitzanus antarcticus* および *Heterorhabdus austrinus* は偶発的にあるいは少数が出現しただけであった．

Abstract: Zooplankton samplings were conducted at 6 stations along 33.5°E in the Indian sector of the Antarctic Ocean from 25 February to 2 March in 1976 by the 17th Japanese Antarctic Research Expedition. Vertical hauls from a depth of 200 m to the surface with a Norpac net (45 cm in diameter, 0.33 mm mesh openings) were carried out. Copepoda occupied more than 85% of the total individual numbers of zooplankton at all stations. The species composition and abundance of copepods were investigated. A total of 18 species except for Oncaeidae were identified. *Calanus propinquus*, *Calanoides acutus*, *Rhincalanus gigas*, *Ctenocalanus vanus*, *Scolecithricella glacialis* and *Oithona similis* were found commonly at almost all stations. *Miclocalanus pygmaeus*, *Lucicutia* sp., *Haloptilus ocellatus*, *Haloptilus oxycephalus* and *Metridia gerlachei* occurred south of 60°S and *Calanus simillimus*, *Clausocalanus laticeps*, *Metridia lucens* and *Oithona frigida* occurred north of 60°S. *Euchaeta antarctica*, *Racovitzanus antarcticus* and *Heterorhabdus austrinus* occurred sporadically and/or in small number.

[1] 愛知県水産試験場尾張分場. Aichi Fisheries Research Institute, Owari Branch, Toyoura, Toyohama, Minamichita-cho, Aichi 470-34.
[2] 国立極地研究所. National Institute of Polar Research, 9-10, Kaga 1-chome, Itabashi-ku, Tokyo 173.
[3] 北海道大学水産学部. Faculty of Fisheries, Hokkaido University, 1-1, Minatocho 3-chome, Hakodate 041.

南極資料，Vol. 36, No. 1, 60-64, 1992
Nankyoku Shiryô (Antarctic Record), Vol. 36, No. 1, 60-64, 1992

1. Introduction

To accumulate faunistic data of zooplankton in the west of Lützow-Holm Bay, we reported the species composition and abundance of copepods along 13°E in the Antarctic Ocean south of the Polar Front based on the samples obtained by the 14th Japanese Antarctic Research Expedition (JARE-14) (1973) (YAMADA *et al.*, 1991). For the above purpose, we report additional data on the species composition and abundance of copepods along 33.5°E. The data were obtained from the samples collected by the 17th Japanese Antarctic Research Expedition (JARE-17).

2. Materials and Methods

Plankton samplings were carried out in the Indian sector of the Antarctic and the Subantarctic waters during the summer season in 1975–1976 by JARE-17 (*cf.* FUKUCHI and TANIMURA, 1981). Samples of 16 were collected by vertical hauls from the 200 m depth to the surface with a Norpac net (45 cm in diameter, 0.33 mm mesh openings) at 16 stations. Six samples which were collected in the south of 50°S along 33.5°E from 25 February to 2 March in 1976 were investigated in the present study (Fig. 1). Processing of samples was made as described in YAMADA *et al.* (1991). Water temperature and salinity data were cited from SHIBAYAMA and OHNIWA (1977).

3. Results and Remarks

Total zooplankton abundance and vertical profile of water temperature and salini-

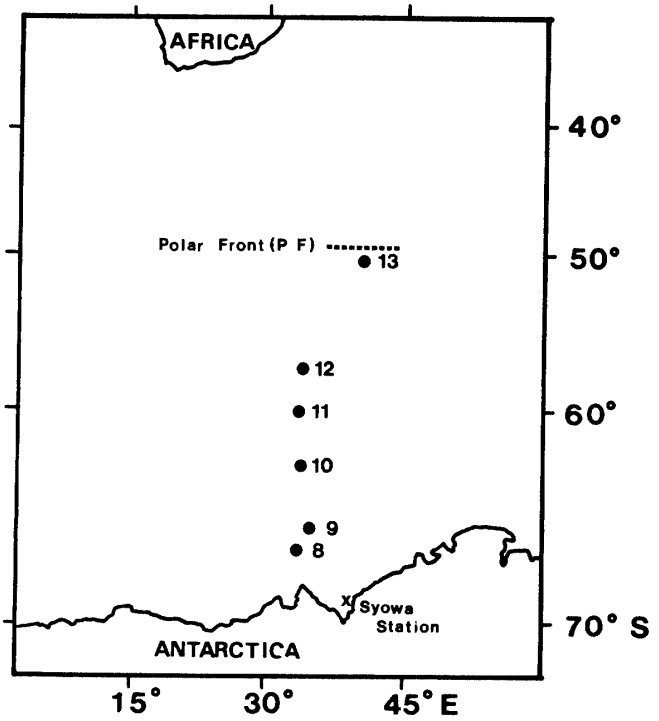

Fig. 1. Location of sampling stations occupied by the 17th Japanese Antarctic Research Expedition (JARE-17) from 25 February to 2 March, 1976. Station numbers are referred to FUKUCHI and TANIMURA (1981).

ty in the upper 200 m layer along 33.5°E are shown in Fig. 2. FUKUCHI (1980) reported that the Polar Front was located in the vicinity of 50°S in this cruise. The northern limit of temperature minimum layer of less than −1°C was observed at 60°S. Low salinity surface water less than 34‰ existed in the upper 100 m layer. Relatively high zooplankton abundance over 200 indiv./m³ was found in the north of 60°S, whereas the abundance decreased southward from 60°S and the low abundance less than 50 indiv./m³ was seen in the south of 66°S.

Copepoda were most dominant zooplankton component, occupying more than 85% of individual numbers of zooplankton at all stations. Other than Copepoda 8 zooplankton taxa were identified. They were Chaetognatha, Gastropoda, Euphausiacea, Polychaeta, Ostracoda, Amphipoda, Appendicularia, Hydrozoa in the order of abundance.

A total of 18 species of copepods except for Oncaeidae were identified; *Calanus propinquus*, *Calanus simillimus*, *Calanoides acutus*, *Rhincalanus gigas*, *Miclocalanus pygmaeus*, *Clausocalanus laticeps*, *Ctenocalanus vanus*, *Euchaeta antarctica*, *Racovitzanus antarcticus*, *Scolecithricella glacialis*, *Metridia gerlachei*, *Metridia lucens*, *Lu-*

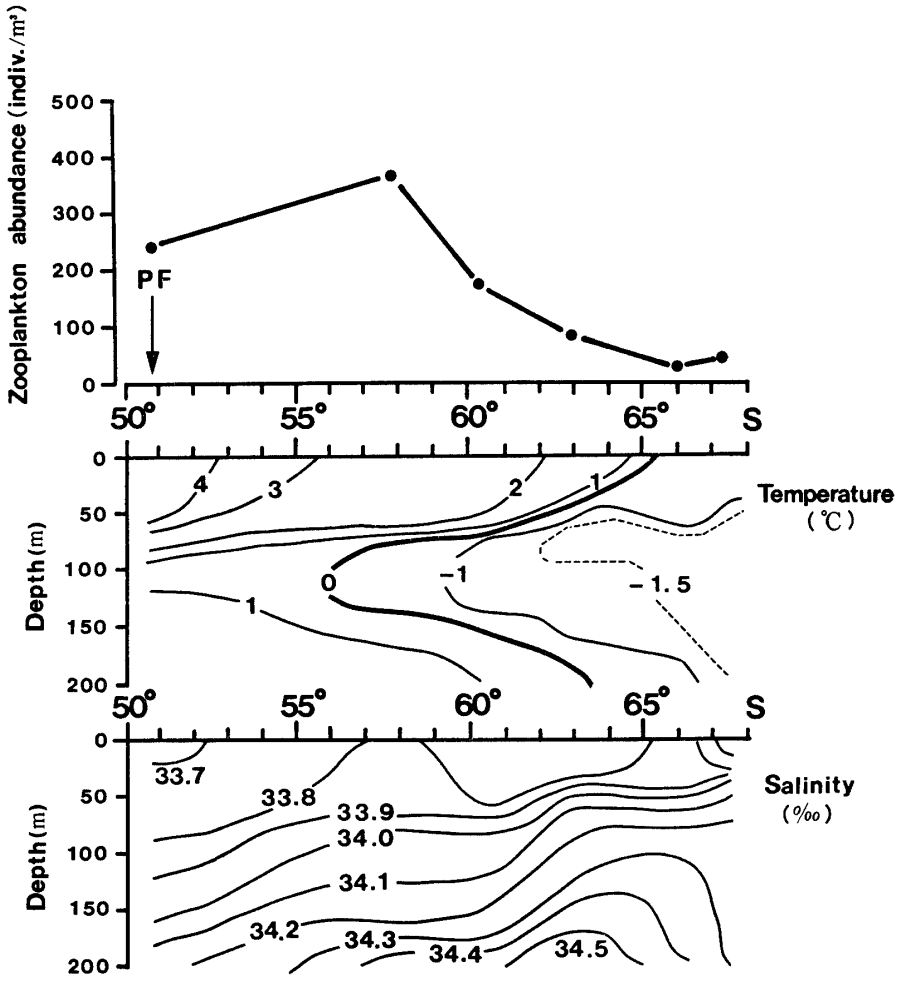

Fig. 2. Zooplankton abundance (upper), vertical section of water temperature (middle) and salinity (lower) in the upper 200 m layer observed along 33.5°E from 25 February to 2 March, 1976. PF: Polar Front

cicutia sp., *Heterorhabdus austrinus*, *Haloptilus ocellatus*, *Haloptilus oxycephalus*, *Oithona frigida* and *Oithona similis*. YAMADA *et al.* (1991) reported 15 species of copepods along 13°E. All of them but one, *Euchirella rostromagna*, were common to the present samples. Four species, *M. pygmaeus*, *H. ocellatus*, *O. frigida* and *Lucicutia* sp. were new to the present observation. The abundance of each copepod species is shown in Table 1. *C. propinquus*, *C. acutus*, *R. gigas*, *C. vanus*, *S. glacialis* and *O. similis* were distributed widely at almost all stations. These species were abundant in the samples of 13°E.

Table 1. List of planktonic copepod species collected with a Norpac net (45 cm in diameter, 0.33 mm mesh openings) along 33.5°E in the Indian sector of the Antarctic Ocean from 25 February to 2 March, 1973. Figures show the number of individuals per m³.

Stn. No.	8	9	10	11	12	13
Position	67°34′S 33°25′E	66°08′S 34°41′E	63°05′S 33°34′E	60°19′S 33°32′E	57°44′S 33°45′E	50°39′S 40°19′S
Calanus propinquus	0.9	3.2	10.7	2.6	8.8	0.5
Calanus simillimus	0	0	0	0	0	49.8
Calanoides acutus	0.1	0.6	6.0	3.5	37.2	1.5
Rhincalanus gigas	0	0.7	1.8	4.3	0.8	10.8
Miclocalanus pygmaeus	0.1	0	0	0	0	0
Clausocalanus laticeps	0	0	0	0.1	0.8	7.8
Ctenocalanus vanus	4.3	6.2	23.8	25.3	80.8	32.5
Euchaeta antarctica	0.3	0.4	0.1	0.6	0.3	0.8
Racovitzanus antarcticus	0.1	0	0.2	0	0.5	0
Scolecithricella glacialis	0.9	2.1	6.4	3.5	11.8	9.1
Metridia gerlachei	3.3	3.8	1.3	1.0	0	0
Metridia lucens	0	0	0	8.2	33.2	14.8
Lucicutia sp.	0	0	0.1	0	0	0
Heterorhabdus austrinus	0	0.1	0	0	0	0.5
Haloptilus ocellatus	0.1	0	0	0	0	0
Haloptilus oxycephalus	0.1	0.1	1.0	0.4	0	0
Oithona frigida	0	0	0	0	1.0	45.0
Oithona similis	32.1	11.5	2.8	100.5	159.3	28.2
Oncaea spp.	0.8	0.4	2.1	9.2	14.1	0.8
Total	43.1	29.1	56.3	159.2	348.6	202.1

M. pygmaeus, *Lucicutia* sp., *H. ocellatus*, *H. oxycephalus* and *M. gerlachei* occurred only in the south of 60°S, but in the samples of 13°E, *H. oxycephalus* and *M. gerlachei* were found as far as the north of 51°S. Both of *M. pygmaeus* and *H. ocellatus* appeared at only southernmost station, Stn. 8 and *Lucicutia* sp. at only Stn. 10 in small number less than 1 indiv./m³.

C. simillimus, *C. laticeps*, *M. lucens* and *O. frigida* were found in the north of 60°S. Although *C. laticeps* and *M. lucens* occurred at only northernmost station near 51°S in the 13°E samples, they were found as far as 60°S in the present samples. *O. frigida* which did not appear in the 13°E samples, occurred at Stns. 12 and 13 in the north of 58°S. *C. simillimus* occurred abundantly at only northernmost station near 50.5°S.

E. antarctica, *R. antarcticus* and *H. austrinus* occurred sporadically and/or in small number (less than 1 indiv./m^3).

Acknowledgments

We are grateful to Dr. Y. OHYAMA and Mr. T. MAYAMA for their generosity in providing the plankton samples for the present work.

References

FUKUCHI, M. (1980): Phytoplankton chlorophyll stocks in the Antarctic Ocean. J. Oceanogr. Soc. Jpn., **36**, 73–84.

FUKUCHI, M. and TANIMURA, A. (1981): Plankton sampling on board FUJI in 1972–1980. JARE Data Rep., **60** (Mar. Biol. 1), 27 p.

SHIBAYAMA, N. and OHNIWA, Y. (1977): Oceanographic data of the 17th Japanese Antarctic Research Expedition 1975–1976. Nankyoku Shiryô (Antarct. Rec.), **60**, 100–131.

YAMADA, S., TANIMURA, A. and MINODA, T. (1991): Copepods collected along 13°E longitude of the Antarctic Ocean in the 1973 summer. Nankyoku Shiryô (Antarct. Rec.), **35** (2), 155–160.

(Received December 10, 1991; Revised manuscript received December 24, 1991)